TWENTY-SECOND

ANNUAL REPORT

OF THE

Trustees of the Philadelphia Gas Works,

TO THE

SELECT AND COMMON COUNCILS

OF THE

CITY OF PHILADELPHIA.

JANUARY, 1857.

PHILADELPHIA:
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1857.

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Appointed May 31st, 1836.

REPORT.

To the Select and Common Councils of the City of Philadelphia:

In conformity with the requisitions of the ordinance establishing the Philadelphia Gas Works, the Board of Trustees present this, their Twenty-second Annual Report, to the Select and Common Councils of the City of Philadelphia, on the department of Gas.

The Trustees have the pleasure to say, that the department of Gas is in a prosperous condition; the results of the past year have realized every reasonable expectation, and enabled the Trustees to meet promptly every engagement.

During the past year, there were no new constructions undertaken; those which were previously commenced, and in progress, have been completed. Among the most important of these, is the large gas-holder, immediately connected with the works at Point Breeze, in the First Ward. It was completed and brought into use, in the early part of the winter, and its efficiency has entirely realized the expectations of the Engineer and Trust. It is believed to be the largest structure of the kind, for the storage of gas, in the United States, being 160 feet in diameter and 90 feet high, and capable of holding one million eight hundred thousand cubic feet of gas. Since it has been brought into use, it has been subjected to the violence of several severe gales of wind, one of which was accompanied with a heavy fall of snow, without affecting in the least degree, its usefulness or steady action.

The experiment thus far with this gas-holder, has settled the question that structures of this character and dimensions, are more reliable for steadiness, and more economical, than similar structures of smaller dimensions.

To secure harmony and promptitude of action between the different works and offices belonging to the Trust, arrangements have been made to connect them by the magnetic telegraph, which will be completed in the course of a short time.

The total amount of gas made at the works belonging to the Trust, during the past year, was four hundred and thirty-four millions, seven hundred and forty-two thousand cubic feet.

Of this amount, there was produced at the works in the

First Ward, - - -	163,930,000
Ninth Ward, - - -	184,357,000
Fifteenth Ward, - -	86,455,000
Making a total of - -	434,742,000 cubic ft.

The greatest consumption of gas in twenty-four hours, was on the 31st of December last, when it amounted to 2,166,000 cubic feet.

There has been used for the production of gas in 1856, 44,468 tons of coal, 351,849 pounds of rosin, and 644 cords of wood.

The greatest number of retorts in use at one time, in all the works, was 356.

The number of meters and services set in 1856, was 2,323.

The total number of consumers registered on the books of the Trust, on the 1st instant, was 25,544.

The total number of public lights supplied with gas, on the 1st instant, made by the works under the Trust, including those supplied through the pipes of the Southwark and Moyamensing Gas Company, and the Germantown Gas Company, was 3,701

And the total number of private lights in use, and supplied by the works under the Trust, in the same manner, was 334,891

Making a total of - - - - - 338,592

The gas supplied under the Trust to the citizens in the Twenty-third Ward, is purchased of and supplied by the Northern Liberties Gas Company, at an annual loss to the Trust. This loss must continue until the consumption in that ward will warrant the expense of laying a main of sufficient capacity, from the works under the Trust, to supply that section of the City, or Councils shall sooner authorize the purchase of those works from which the present supply is obtained.

There were laid during the past year, 50,122 feet of street mains, making the entire length of mains belonging to the

Trust, 1,132,321 feet. The total amount of service pipe laid, is 391,136 feet; making 214.4 miles of mains, and 74 miles of services.

The funds provided for the extension of the works, mains, service-pipes and meters, are exhausted; it will therefore be necessary to decline receiving any new applications for gas, until Councils shall authorize the necessary means therefor. By the terms of the Trust, as well as by the spirit of the Consolidation Act, and Ordinances of Councils, the Trustees are not at liberty to contract obligations beyond the means provided for their payment. All further extension of mains and the supply of service pipes and meters must necessarily cease, unless the means shall be supplied by the applicants for gas, or by Councils.

The Trustees are thus explicit, in order that Councils may be timely advised of the necessity of making early provision to meet the wants of their fellow citizens.

The department of public lighting has necessarily occupied a large share of the attention of the Trust. It was a department of public business in which they had no experience, and under which they entered without any guide, but with an unwavering purpose to discharge faithfully every obligation to Councils and the public. This service, it will be recollected, was not solicited by the Trust; it was accepted at the instance of Councils, on the ground of public economy, as well as to have the City more efficiently lighted. Much labor and time were expended in organizing a system which would be effective. This object is accomplished, and there only remains to be completed the maps of the different wards, with the location of each public lamp.

It is believed by impartial judges, that this service has been faithfully performed by the Trust, and that the public lamps are in a state of efficiency, far superior in every respect, compared with the condition in which they were when the contract with the City was made.

The efforts of the Superintendent of Distribution, who, with other duties, has charge of this department, are untiring to have this branch of the public service all that can be desired.

The total number of public lamps on the 1st instant, which are lighted under the contract, was 5,574; of these, 877 are fluid lamps, and the remainder gas lamps. To light, extinguish,

cleanse and repair these lamps, requires the constant services of a large number of persons. Among so many employees, occasional omissions of duty will occur; every precaution, however, has been taken, both to prevent and detect any neglect of duty. The public are daily advised that in addition to the principal office, other offices have been opened in different sections of the City, for the purpose of receiving information from the citizens, respecting any neglect of the public lamps.

With regard to the economy of the system under the contract, the only means which the Trustees possess of forming a just estimate is from the official report of the Controller, made to Councils, January 16, 1856; the amount reported as the expenses for lighting the City in 1855, is $286,625 25. By the ordinance of Councils, approved February 16, 1856, under which the contract between the Trustees and the City was made, the entire sum appropriated for this whole service for the year 1856, was $225,000; and this amount, after meeting every engagement for the entire year left a balance to the credit of the appropriation of several thousand dollars.

The average quantity of gas consumed monthly by each lamp, was fully 1,800 feet, or 21,600 feet per annum, as ascertained by the lamp meters, from July 1, to December 31, 1856. The burners used on the public lamps, average full six feet per hour, which gives 3,600 hours of actual lighting for the year 1856.

The subject of negotiating with the several Gas Companies referred to in the ordinance of March 20th, 1855, has occupied the attention of the Trust during the past year. It has recently been presented to Councils by the Committees on Gas of the Select and Common Councils, and is now before your honorable bodies for consideration and definite action.

Should Councils in their wisdom decide upon the purchase of those works, and place them under the management of the Trustees, it is indispensible that sufficient means should be provided for their enlargement, for the extension of the mains, service pipes and meters. Without such means, the Trustees will not be authorized to assume their management, and reduce the price of gas to that at present charged by the Trust to private consumers.

The attention of Councils is again invited to the importance of providing residences for the workmen employed at the works in the First Ward. It was with extraordinary labor and expense that a road was opened to these works after the recent snow storm, and a large proportion of the workmen, owing to the want of dwellings near the works, were subjected to much toil and suffering in reaching them. Convenient and respectable residences can be furnished on the ground belonging to the Trust, and at a rent which will be within the reach of any ordinary workman, and the rent can be secured out of their monthly pay.

The Trustees are happy to say, that notwithstanding the very large engagements contracted during the past year by the Trust, they were all promptly met as they matured.

By the operation of the Sinking Fund, and investments of the Contingent Fund, one-half of the entire cost of all the works under the management of the Trust, is virtually discharged. This has been effected without burdening the citizens with one cent additional tax, and at the same time they have been supplied with gas of a superior quality, and at a lower price than is furnished by any other works in any of our Atlantic cities.

The founders of the Philadelphia Gas Works proposed to build up a gas establishment, which, at moderate prices, for its products, and a well-devised system of finance, should pay for its entire cost, without adding to the burden of taxes, and ultimately become the heritage of the citizens, and the profits therefrom applied to lessen the tax for public lighting. All this will be accomplished, if the system so well devised and skillfully prosecuted, shall be in the future as faithfully adhered to.

For a more full and detailed condition of the works and finances, Councils are respectfully referred to the reports of the Engineer and Cashier, made to the Board of Trustees by those officers, of their respective departments, and which are herewith submitted. By order of the Trustees,

GEO. H. BURGIN, *President.*

WILLIAM FENNELL, *Register.*

OFFICE PHILADELPHIA GAS WORKS,
January 23d, 1857.

ENGINEER'S REPORT.

TO THE TRUSTEES OF THE PHILADELPHIA GAS WORKS:

Gentlemen—In compliance with the requisition of the By-Laws of the Board, the Engineer presents his Twenty-first Annual Report of the operations and state of the works.

The several factories belonging to the Trust, have produced in the year 1856, four hundred and thirty-four million seven hundred and forty-two thousand cubic feet of gas; of which 163,930,000 cubic feet were made at the works in First Ward; 184,357,000 in Ninth Ward, and 86,455,000 in Fifteenth Ward.

The whole quantity that has been made under the Trust, from its commencement, is over twenty-seven hundred million cubic feet, or in exact figures 2,729,021,000.

The largest quantity used in twenty-four hours, was 2,166,000 cubic feet, on the last night of the year, and the largest daily product of the several works has been 799,000 in First Ward; 1,084,000 in Ninth Ward, and 440,000 in Fifteenth Ward.

These maximum daily productions did not occur simultaneously, and therefore their aggregate amount was not produced on any one day, it having been found most convenient to manage the different factories in such way, that one might be in full working, when the yield of another had fallen off by reason of the wear of its retorts.

The materials used in making gas in the several factories, are as shown in the annexed tabular statements:

	1st Ward. Tons.	9th Ward. Tons.	15th Ward. Tons.	Total. Tons.
Coal in store January 1st, 1856,	3,792	7,500	113	11,405
" bought in 1856, - -	24,028	27,822	9,294	61,144
	27,820	35,322	9,407	72,549
Coal carbonized in 1856, - -	16,372	19,034	9,062	44,468
" in store January 1st, 1857, -	11,448	16,288	345	28,081
	27,820	35,322	9,407	72,549

	1st Ward. Bush.	9th Ward. Bush.	15th Ward. Bush.	Total. Bush.
Coke on hand Januray 1st, 1856, -	6 500	34,600	6,900	48,000
" made in 1856, - -	563,563	680,444	324,817	1,568,824
	570,063	715,044	331,717	1,616,824
" used under retorts in 1856, -	228,307	381,169	202,037	811,513
" " in office, yards, &c., -	62,403	10,169	4,500	77,072
" sold, - - - -	99,353	318,706	100,180	518,239
" stock on hand January 1st, 1857,	180,000	5,000	25,000	210,000
	570,063	715,044	331,717	1 616,824

There has also been used 351,849 pounds of rosin, and 644 cords wood, and 132,173 bushels of lime in purifiers.

The maximum number of retorts continuously in use at the works in First Ward, was 126; in Ninth Ward, 240; and in the Fifteenth ward, 97. The average being, in the First Ward, $78\frac{1}{2}$; in the Ninth Ward, $112\frac{1}{4}$; and in the Fifteenth Ward, $53\frac{5}{12}$. The greatest number at work at any one time, in all these works, being 356.

The largest daily average yield of each retort in the year was

7,194 feet at the works in First Ward.
5,382 " " " Ninth Ward.
5,150 " " " Fifteenth Ward.

The largest quantity from each pound of coal respectively, made for any full day's work,

$4\frac{92}{100}$ feet at the works in First Ward.
$4\frac{65}{100}$ " " " Ninth Ward.
$4\frac{64}{100}$ " " " Fifteenth Ward.

The number of meters and service pipes put in at new places, has been,

In the wards comprising the Old City, - - -	843
" " " Spring Garden and Penn,	1,076
" " " Moyamensing, - -	244
" Twenty-third Ward, - - - -	44
" Twenty-fourth Ward, - - - -	116
	2,323

Making a total of meters and services set in 1856, twenty-three hundred and twenty-three; and the whole number now in use, twenty-four thousand four hundred and forty-six.

The number of applications registered during the year, has been,

In the Old City, including Moyamensing,	3,846
In Spring Garden and Penn,	2,626
In Twenty-third Ward,	414
In Twenty-fourth Ward,	254
In all,	7,140

Deducting from these, the removals and discontinuances, amounting to 4,494, and adding the number of previous consumers, shows the whole number of gas consumers, at the present time on the books of the Trust, to be 25,544.

The lights added during the year, are as follows:

Old City,	13,475
Spring Garden and Penn,	14,673
Moyamensing,	1,809
Twenty-fourth Ward,	295
Previously in use,*	283,216
	313,468

The public lamps now in use, amount in all the wards supplied from these works, to 3,701, adding these to 280,756 private lights previously supplied, and also 18,282 private lights supplied through the pipes of the Southwark Gas Company, and 5,601 private lights supplied the Germantown Gas Company, makes the aggregate of 338,592 lights receiving gas from these works.

In the Twenty-third ward, there are 2,460 private and 55 public lights supplied with gas from the Northern Liberties Gas Company.

The length of street mains laid during the year, has been 50,122 feet, and the entire length of mains belonging to the Trust, is 1,132,221 feet. The aggregate length of service pipe is 391,136 feet, making $214\frac{4}{10}$ miles of mains, and 74 miles of services.

The extension of the pipes, and consequent increased consumption of gas in some of the northern wards, within a few years, has been so great, as to create some difficulty in distribut-

* This includes those in Twenty-third Ward which are on the books of the Trust, but supplied by the Northern Liberties Gas Company.

ing a proper supply, in consequence of the insufficient capacity of many of the old mains of the Spring Garden works. In order to remove this defect of supply, a main of larger size than those before laid should be carried eastward from the 20 inch main, recently laid in Broad street, so as to intersect all the pipes lying north and south, as far east as Sixth street. For this purpose, an outlet, 10 inches in diameter, was placed on the Broad street main, at the north end of the 20 inch pipe; with which a suitable connexion can be made, and the defect of pressure now felt in the Fourteenth, Fifteenth and Twentieth Wards, be thus removed.

Until further provision be made by law for the extension of main pipes and services, all new work in this department will have of necessity to be postponed, unless the Board shall adopt the course pursued on a former occasion, of allowing such work to be done when the applicants agree to pay the entire cost of the work and fixtures.

At the several manufacturing stations no new constructions have been undertaken in the past year; the improvements completed being only those that had been previously commenced.

Of these, the most important is the large gas-holder, No. 12, which was so far completed in the autumn as to be in good working condition. It was put in operation early in the winter, and has continued to work with great steadiness and regularity.

Its efficiency as a great reservoir and regulator of pressure, during the hours of maximum consumption, has fully equalled every expectation. Its advantages in these respects cannot easily be over-estimated, and by its steady action during several violent gales of wind, it proves that a gas-holder of very large dimensions is much more dependable than those that are smaller.* Notwithstanding the unexpected obstacles encountered in the construction of this gas-holder and tank, by reason of the difficult character of the foundations and casu-

* Since the presentation of this report to the Trustees, the occurrence of the great snow storm, of January 18th, accompanied by a gale of unusual violence, has afforded another opportunity for testing the stability of this gas-holder. At the time of the storm it was raised more than forty feet high, containing over 800,000 cubic feet of gas, and showed not the slightest symptom of unsteadiness or excessive strain.

alties of the weather, it is worthy of note, that its cost per cubic foot, of capacity, is much less than that of any other gas-holder ever built at these works, with the exception only of No. 11, which being also of unusually large size, was constructed at less cost per cubic foot than any other, of which I have any knowledge, in the United States.

Had the unlooked for difficulties alluded to, not occurred, the relative cost of No. 12 would have been below that of No. 11, and it may now be esteemed an established truth, that in all large works economy is promoted by the use of gas-holders of very large dimensions. As it is believed that two gas-holders of as large capacity as these, are not to be found at any other Gas Works, the present may be considered a suitable occasion for a brief description of them.

No. 11 was built in 1850, and has been in almost constant use since that year. It is of telescopic plan, 140 feet in diameter and 70 feet high, containing one million cubic feet.

Gas-holder No. 12 was put in operation early in December last; it is like the other, telescopic in form, 160 feet in diameter and 90 feet high, containing one million eight hundred thousand cubic feet. The tank is 162 feet in clear diameter, and 46 feet deep, excavated in gravel and clay, with a central mound 25 feet high.

When the excavation for this tank had been sunk nearly to the depth required for the foundation and floor, the substratum of stiff clay was forced upward by the pressure of water beneath, revealing a quicksand that existed about 55 feet below the top level of the tank, which had not been detected by borings previously made to a depth of more than 50 feet, for the purpose of proving the nature of the ground. This unwelcome discovery made it necessary, for the proper security of the foundations, to adopt some expedient for reaching a firm bed of gravel, which was found to lie about 70 feet from the surface. The great influx of water at this depth, of more than 40 feet below tide, forbade any other mode of reaching this solid bottom than by driving piles. Some thousands were driven in such positions as would allow the tank walls, the guide towers and the floor, to rest on heavy timbers secured by bolting to the piles after the latter had been driven home in the solid gravel below.

These timbers are laid close together, radiating from the central mound to the outer circumference of the foundation walls; their joints were tightly caulked, and the whole covered with a bed of hydraulic concrete. The tank walls are of ruble masonry, built in two separate rings, the outer one, four feet thick, laid in gravel mortar; the inner one, eighteen inches thick, laid in hydraulic cement, with an interstice of six inches filled in with hydraulic concrete. To increase the tightness of the bottom, it is covered by a dome-shaped pavement of brick, grouted with hydraulic cement. An annular wall of stone is built within the tank, midway between the outer wall and the centre. Upon this are placed 24 tressel frames, 35 feet high, which sustain the crown of the gas-holder, so as to prevent the swag of the sheets when unsupported by the gas. No rafters are used, nor any interior frame work, except a series of tie-rods, which are secured to the crown sheets in such way as to distribute over its entire area the weight of the centre post and the vertical sides.

This arrangement was adopted in consequence of the great weight required to give the holder such pressure as would control all the others connected with the several works, all of which are more than three miles distant, and some two and three times more remote.

To facilitate the future increase of its pressure, the legs on which the inner section stands, and against which the outer section is guided, are made of cast-iron, and hollow, for receiving the additional weights that may hereafter be required.

To support and guide the gas-holder, there are twelve towers of cast-iron, ninety-five feet high, standing on stone bases; their form is pentagonal, about twelve feet in diameter. The girders connecting the towers are in the form of a heavy balustrade, with open quatrefoil panels, and are placed fifteen feet below the summits of the towers.

The weight of metal in the whole structure is over one thousand tons. That of the gas-holder alone about three hundred tons.

To those who are not familiar with the properties of gases, it may appear incredible that a vast structure, weighing over 600,000 pounds, can be sustained with safety, resting solely upon

a fluid so light and subtle as illuminating gas; whose density is less than half that of atmospheric air, or only one sixteen-hundredth part the weight of water. But the great diameter of this machine gives it an area of 20,000 square feet, and the whole pressure due to its weight is only 30 pounds on the square foot, equal to a column of water not quite six inches high.

It is therefore raised with the greatest ease by the inflowing gas; by which it can be lifted out of the water of the tank, to a height of ninety feet, and as the gas is consumed or passed into the other holders, it is gently lowered, with the silent, steady motion of a great pneumatic press.

Another structure which has been completed during the past year, is the hydraulic elevator, used for raising coals from the wharf, into the coal stores recently constructed at the First Ward works.

The construction and operation of this machine are of extreme simplicity. Two rectangular water-tight boxes, made of boiler iron, capable of holding about 1½ tons of water, each, are suspended to the ends of a strong chain that passes over a wheel placed at the top of the hoisting tower. The length of the chain is such, that one box is level with the railroad track on the wharf, when the other is level with a similar track leading into the attic of the coal stores; a short section of rail track on top of each box is adjusted to fit these main tracks when the boxes are in place.

A loaded car being run onto the lower box, and a light car on the upper one, water is allowed to flow into the latter, from a cistern, until its weight preponderates, when it descends and raises the loaded car, its velocity being regulated by means of a powerful friction brake, which is worked by an attendant, who likewise works the valves for supplying the water.

When the descending car reaches the bottom of the tower, a self-acting valve opens and allows its load of water to escape.

After the coals have been delivered from the vessel at the wharf, into an iron car, placed on a railway laid along the water's edge, they need no further handling, being drawn by a mule to the platform of the elevator, by which they are hoisted 60 feet, to a track leading into the attic of the coal stores, when they

are dropped from the car, at a height which allows the pile to trim itself to the slope of the roof; thus filling up the store more completely than could be done by any other mode, and saving more than three-fourths the expense of storing in the usual way. As the two coal stores now erected are capable of holding only about one-half the coal required for the winter's supply, it will be a measure of good economy to build two more in the present year; whereby the saving of expense in handling and hauling may be gained upon the whole quantity used, and the coals be more perfectly protected from damage, than they can be in temporary sheds.

In constructing the retort benches at the First Ward station, provision was made for their adaptation to various different plans of setting the retorts in the fire arches, without disturbing the permanent masonry. The superior facilities for making comparative trials of different plans thus secured, have not been without their proper fruits.

The Assistant Engineer, under whose immediate direction the works at this station are placed, has introduced a new plan of setting in an open arch, disencumbered of the usual complex arrangement of flues, from which he has produced results much more economical than any heretofore obtained at the older works. The daily yield when the beds are new and in good condition, has been over 8,000 cubic feet of gas from each retort, or about 25,000 from a bed of three. The average yield, during the operations of an entire season, has been nearly 7,000 feet a day from each retort, or 20,000 feet from the bed of three.

The contrast of results derivable from different modes of setting the retorts, is exhibited very clearly in a trial made at the request of a Trustee, of another plan of setting, used in a neighboring City. In order to ensure the utmost fairness and accuracy of the comparison, the retorts used were of the same pattern, exactly alike in all respects. The beds in which they were placed, were immediately contiguous in the same section of retort bench, and were worked by the same gang of stokers, using the same kinds of coal and fuel. The trial was continued many months, and until the retorts were used up, so far as practical economy of use would permit. The contrast is remarkable and instructive. When the new setting was first

put at work, with the flue dampers adjusted according to instructions given by its suggestor, the daily yield was about 3,700 feet to the retort, or 11,000 to the bed of three retorts. By a different adjustment, found upon experiment to produce the best results obtainable, the yield was increased to 4,300 feet per day from each retort, or about 13,000 feet from each bed of three. This was the utmost they could be made to yield, without endangering the destruction of the bed by melting down the furnace.

As these results speak for themselves, they require but brief comment. The cost for retorts, for retort-house room, and for labor of working, is the same in both the plans of setting; the daily product in one case exceeds that in the other by one-half.

The setting in open arches, when fully introduced, will much increase the capacity and profitable results of our works; the other would take largely from us in both these respects. The practical difference between the adoption of the one or the other, in its money value, on our present scale of operations, would amount annually to the interest on a capital of more than half a million of dollars.

By the results of these experiments, which have been continued through a term of many months, I feel warranted in reiterating the opinion expressed last year, that whenever the contemplated transfer of the entire manufacturing operations of the works to the First Ward station shall take place, the advantages arising from the improved arrangements there in use, will be sufficient to pay a large interest on the cost of the removal.

Another year's trial of the cellular retort, for the production of gas from vegetable substances, has confirmed the results heretofore reported, with respect to the quantity and illuminating quality of the gas thus obtained. As there seemed to be some doubt as to the permanency of this gas, it was thought worth while to test it in such way as would bring the question to a satisfactory solution.

A considerable quantity of it (30,000 cubic feet) was stored in a gas-holder by itself, and after remaining thus isolated several weeks, was tested photometrically. It had not changed perceptibly, having retained its illuminating power as completely as coal gas under similar trial.

With the present relative prices of wood and coal in the Philadelphia market, the cost of making gas from the former is somewhat the lower, but the difference is not sufficient to justify the immediate abandonment of the latter. Should a commercial change occur, by which the price of coals should be again advanced to the high point reached two or three years ago, there might arise important advantages to these works and its customers, from the ability to make the substitution of wood for coal.

It will therefore be consistent with good policy to continue, as heretofore, the use of such number of wood retorts, as can be supplied with that material, without sensibly affecting its market price, particularly as their use is accompanied by some immediate profit and entails no extra cost for the contingent advantages it presents.

A very careful and accurate analysis and photometric examination of wood gas have been made by two eminent analytical chemists, (Dr. Wolcott Gibbs, of New York, and Dr. F. A. Genth, of Philadelphia,) whose report of their chemical results furnishes a highly satisfactory explanation of certain curious phenomena that accompany the combustion of this gas.

They examined two varieties of gas, one made from old field pine, the other from small second growth oak, with the following results:

	Gas from Pine.	Gas from Oak.
Specific gravity,	0.663	0.580
Composition.		
Hydrogen,	32.71	30.44
Light Carb. Hydrogen,	21.50	33.12
Olef. Gas and Hydro Carbon Vapors,	10.57	6.46
Carbonic Oxide,	27.11	26.11
Carbonic Acid,	4.90	0.48
Oxygen,	0.66	None.
Nitrogen,	2.55	3.39
	100.00	100.00

These gases were collected at the Ninth Ward Works, and taken to New York for analysis. Their illuminating power was tested and found to be over 26 candles for a five feet burner.

A subsequent series of photometric trials of wood gas, previously passed through a long pipe exposed to a temperature of 15° F., gave an average of 18.3 candles from a burner consuming $4\frac{6}{10}$ ft. per hour.

The conclusion at which these gentlemen arrive from their elaborate examination is, "that wood gas, in illuminating power, is fully equal to the average of coal gas."

It affords me much gratification to be able to report, with much commendation, upon the working of the new department, recently organized, for the superintendence of the general distribution and the public lighting. Its early operation was embarrassed by the want of proper plans and records, for showing the number and position of the mains and lamps, in many of the wards outside of the old city limits. The remedy for these deficiencies was promptly taken in hand, and the matured system heretofore in use within those limits will soon be extended over the whole.

The defects, last year reported as the cause of so much waste of gas by leakage in certain northern wards, have been to some extent repaired; and the difference in the loss account gives proof of the good effects produced; but there still remains much more to be done in this respect.

For these excellent results, much is due to the intelligent and assiduous labors of the Superintendent, Mr. Wm. G. Flanagan, whose whole attention is devoted to the responsible duties of the office, with a zeal and faithfulness worthy of high praise.

Early in the summer, the connection that had been authorized last winter with the pipes of the Germantown Gas Works, was completed; and for some months the supply to the Twenty-second Ward has been drawn from the City Works.

To prevent the inconvenience that might arise from the length of the conduit, and the large number of intermediate consumers, the distance to the farthest off customer being nearly ten miles, it was thought advisable to arrange the supply so that the gas-holder at the Germantown Works should be filled by day, and the connection with the City Works be shut off during the hours of active lighting. By this procedure, the pressure in the Twenty-Second Ward is the same as if the gas was made at their local works. The quantity supplied is about 28,000

cubic feet daily, as registered by a station meter placed near the south line of the Ward.

The growing magnitude of the operations, at the different offices and works managed under the gas trust, and their constant mutual dependence, have created a necessity for frequent intercommunication of intelligence, and official directions, such as can be most perfectly obtained, only by means of the magnetic telegraph. No time, therefore, has been lost in carrying into effect the recent directions of the Board upon this subject; and the contractor is moving so promptly, that the line will very soon be in readiness for use.

Of the advantages to be derived from this, it is not easy to form in advance anything like an adequate estimate. In the management and control of the numerous gas-holders, many miles apart, but in close mechanical connexion, it will add greatly to their security. In the regulation of the street main pressure, at various points during the hours of lighting, it will prevent the inconveniences that now so frequently result from the want of prompt information at the Works. In regulating the lighting and extinguishing of the public lamps, in giving a knowledge of the exact locality of fires, and in a vast number of other matters, it will be truly of inestimable value.

No action having yet been taken for providing convenient residences for the workmen employed at the Works in the First Ward, the duty is again imposed of reporting it as a cause of much hardship to them, and no little disadvantage to the Works.

A succinct view of the principal statistics of the affairs of the Trust will be found in the appended tabular statements.

Respectfully,

JOHN C. CRESSON, *Engineer.*

Philadelphia City Gas Works,
January, 1857.

REPORT OF THE CASHIER.

TO THE TRUSTEES OF THE PHILADELPHIA GAS WORKS:

Gentlemen:—I have the honor to report to you the condition of the finances of the Trustees as they stood on the first of January, 1857. In doing so, I have the pleasure to say that they present a very satisfactory exhibit of the condition of the Trust.

It will be seen, by reference to the accounts herewith submitted, that the entire capital invested in the Philadelphia Gas Works, on the first of the present month, was $2,615,774 35

Of this amount there was derived from Loans authorized for that purpose, - -	1,776,200 00
From investments of the Contingent Fund, &c.,	389,574 35
From the works taken from the City under the Ordinance of Councils, approved March 20, 1855,	450,000 00
	$2,615,774 35

The investments in the Sinking Fund, up to the 1st instant, consisting of Gas Loans and Loans of the City, amounted to - - -	$705,441 63
Amount invested under Ordinance of March 20, 1855, - - - - -	18,900 00
Appropriation and interest due to Sinking Fund, the 1st instant, - - - -	91,849 07
Amount of Contingent Fund invested in Works, January, 1, 1856, - - - -	336,272 69
Amount of Contingent Fund, invested during the past year, and belonging to and placed to the credit of that Fund, January 1, 1857,	42,204 93
Making a total of - - -	$1,194,668 32

It will thus be seen at a glance, that nearly one-half of the entire debt or cost of all the works, under the management of the Trust, is virtually paid. Could the investments in the Sinking Fund be disposed of at par, the first six loans could, with the consent of the holders, be immediately paid in full.

The Sinking Fund has accumulated faster than the obligations of the Trust require. The first loan will not be due until 1861, when the Sinking Fund must and will be sufficient to pay in full the first eight loans.

Our engagements for coal and other materials used exclusively in the manufacture of gas, including also wages of every description, repairs, public lighting and incidental expenses, amounted during the past year to $674,994 94. To meet such engagements profitably, the working capital should at least be $250,000.

During the past year, especially, cash could at all times command much more advantageous terms than the most undoubted credit. It is not only desirable, therefore, but indispensable, for the successful and economical working of our system, that we should have a working capital adequate for all our wants.

It is recommended that the accumulations of the Contingent Fund, which heretofore have been applied to the extension of the works and mains, shall be in future employed as working capital, until a sufficient amount for that purpose is secured.

The temporary loans on the first of January, 1856, amounted to $141,449 31. On the first of January, 1857, they amounted to $43,711 15—showing a reduction in this item of $97,738 16.

The balance of Loan 9th will all be absorbed by the engagements of the Trust. It will be necessary, therefore, to decline laying any additional mains or receiving any new applications for gas until the necessary provision shall be made therefor. This is a subject which claims the immediate attention of the Trustees, and through them the City Councils, in order that early and proper measures may be adopted for supplying the citizens with gas.

As the station meters for measuring the supply of gas furnished to the late districts of Moyamensing and West Philadelphia, were removed for the purpose of affording an increased

supply of gas to the citizens residing in those portions of the City, the receipts for gas from those districts were consequently placed directly to the credit of the works in the First and Ninth Wards, which furnished the gas.

The total receipts from gas, for private and public lighting, and for other products furnished by all the works during the year 1856, were $932,091 31.

The receipts from gas for private consumption furnished by the works of the Fifteenth Ward, during the last year, exceed those of the same period in 1855, twenty-five per cent.

The quantity of gas sold during the past year, which was furnished by these works, is twelve per cent. less than the amount made, as recorded by the station meter of the works. This is an improvement on the consumption of 1855, and is doubtless owing to the fact, that during the past year, some of the defects in the old lines of mains in the Fifteenth Ward were corrected.

The department of public lighting has occupied a large share of attention during the past year. The service was entirely novel—we had no experience or guide to direct us. A system was to be devised, and carefully watched and perfected. This has been in a great degree accomplished. Maps of the different wards are in process of preparation, which will exhibit the location of each public lamp. When these maps are finished, and the lamps numbered and registered, the department of lighting will be completed.

This department, notwithstanding its novelty and the difficulties attending its organization, has fully met the expectations which were entertained when the contract for that branch of the public service was made with the City. It is believed, too, by impartial judges, that the service has been faithfully performed. The lamps are kept in good repair, lighted, extinguished and cleansed, but with rare exceptions, in strict conformity with the contract.

The purpose and aim of the Superintendent of Distribution, (who, with other duties, is charged with the care of the public lamps) is to have that branch of the public service perfect. And it is but simple justice to him to say that his efforts to this end are unremitting.

There are a large number of persons employed in lighting, extinguishing, cleaning and repairing the public lamps, and among so many employees occasional omissions of duty will occur. Every precaution, however, has been taken by the Superintendent of Distribution, both to prevent and detect any neglect of duty. Offices have been opened in different sections of the City for the purpose of receiving information from the citizens respecting any neglect on the part of those charged with the repairing, cleaning, lighting and extinguishing of the public lamps.

The average consumption of gas for each public lamp from July 1, 1856, to December 31, 1856, is found, by actual registry of meters attached to a number of the lamps, to be full 1,800 cubic feet per month, equal to 21,600 feet per annum. The burners average six feet per hour, which of course gives 3,600 hours of actual lighting for each lamp during the year.

The prices which are paid for gas to the various Gas Companies, which supply about one-third of the whole number of the public gas lamps in use, causes the whole of the gas used for public lighting to cost the Trust twenty-five per cent. more than it would if the whole of the gas used for this department could be supplied by the works belonging to the Trust.

There can be no doubt that the present system of public lighting is one of economy to the City, as compared with the expenditures of former years for this branch of public service.

In the annual report of the Controller made to Councils, January 16, 1856, of the expenditures of the various departments for the year 1855, the amount reported as the expenses for lighting the City in 1855, is $286,625 25, while the amount appropriated for the same service in 1856, was $225,000, which, after paying the entire cost of lighting, extinguishing, cleaning and repairing the public lamps, left a balance of some $3,000 to the credit of the appropriation.

From the most reliable sources, it is ascertained that the Boston Gas Light Company receive from the City of Boston one cent. per hour for the gas consumed in each public lamp, averaging five feet of gas per hour, and one cent $\frac{43}{100}$ for lighting, cleaning and extinguishing each lamp per night. The repairs are done at the cost of the City.

If the number of hours of lighting time, and the amount of gas consumed by each public lamp in Boston, be made equal to that which is given by the Trustees to the City of Philadelphia, each public lamp, exclusive of repairs, would cost the City of Boston $47\frac{71}{100}$ annually.

The Manhattan Gas Company of New York receive from that City $25 00 per annum for each public lamp, estimated to burn 3,833 hours per year. This sum includes gas, lighting, extinguishing and cleaning. All the repairs are made at the cost of the City.

The New York Gas Light Company of New York receive from that City $25 78$\frac{2}{3}$ for each public lamp, annually estimated to burn 3,833 hours per year. The service rendered by this Company is similar to that rendered by the Manhattan Gas Company.

The Gas Light Company of Baltimore receive from the City of Baltimore $22 50 per annum for gas for each public lamp, estimated to burn 2,300 hours per year. The City of Baltimore pays all expenses for lighting, extinguishing, cleaning and repairing.

We are not informed what is the average quantity of gas consumed by each lamp per annum, which the three last named Companies supply, but taking the prices received by the Manhattan Gas Company and the New York Gas Light Company, and adding repairs, &c., the difference between the actual cost to the City of New York and the actual cost to the City of Philadelphia for public lighting per lamp respectively, cannot be material.

The Gas Light Company of Baltimore estimate 2,300 hours as their time of lighting each public lamp per annum, for which the City of Baltimore pays them $22\frac{50}{100}$; by making the Baltimore time equivalent to that of Philadelphia, and add the expenses of lighting, extinguishing, cleaning and repairing, and the result will exceed $43 00 per annum as the cost of each public lamp.

There is another fact which ought not to be overlooked—it is this: the Boston and New York Gas Companies are each receiving $2\frac{50}{100}$ per thousand cubic feet for gas for private

lighting, and the Baltimore Gas Light Company receives $3 00 for the same quantity. They are all private Companies.

Could the Trust have received $2 50 per thousand cubic feet for all the gas made at their works during the year 1856, the whole of the public lighting could have been performed by the Trustees for nearly one-half of the price which they received for it.

This is the true aspect in which this subject is to be examined, and it will be patent to every candid mind, that comparing the prices received by the Trust for private and public lighting, with the prices received for the same objects by other Gas Works, that the citizens of Philadelphia receive their public lighting at a much lower rate than any other of the Atlantic Cities of the Union.

Beside, it should not be forgotten, that if any profit should perchance accrue to the Trust by the performance of this service, the whole benefit inures to the citizens—it is their property.

There is another fact, too, which ought not to be lost sight of —that the Trust sustained a loss of over $7,000 during the past year by discounts on warrants on the City Treasurer received in payment for public lighting.

Complaints have been and are made of the want of sufficient light from the public lamps in those portions of the City which are supplied with gas by the Southwark and Moyamensing Gas Company, and by the Germantown Gas Company. This is owing to want of sufficient pressure, which is felt in the early part of the evening, when the private and public consumption is general. As soon as the private consumption declines there is an abundance of gas for the remainder of the night for public lighting.

This evil will no doubt continue until Councils shall take some definite action with regard to the purchase of those works. The public lamps in which "burning fluid" is used for lighting, have been the cause of much labor and anxiety to the department, not only on account of the comparatively feeble light which they afford, but in repeated instances the public have been deprived even of that by evil disposed persons, who have taken the lamp with its contents from the lantern, thus subjecting the

public to greater inconveniences, the department to blame, and the Trust to a loss.

Every effort has been made and will continue to be made to render these "fluid lamps" as efficient as the nature of the material used for lighting will admit.

The fluid is furnished by contract by responsible parties, who have honorably met all their engagements, and deserve the approbation they receive, and the conduct of the contractors for ordinary repairs, equally merits the commendation of the Trust.

The total number of public lamps, January 1, 1857, lighted under the contract with Councils, was 5,550. Of these, 877 are "fluid lamps," and the remainder 4,673 are "gas lamps." Of these "gas lamps," 835 are supplied with gas furnished by the Northern Liberties Gas Company; 161 are furnished with gas supplied by the Germantown Gas Company; 265 are furnished with gas supplied by the Southwark and Moyamensing Gas Company; 63 are furnished with gas supplied by the Manayunk Gas Company, and the remainder, 3,349, are directly supplied with gas from the works under the Trust.

The subject of purchasing the Gas Works, as provided for in the Ordinance of March 20th, 1855, has occupied the attention, jointly, of the Engineer and Cashier, and such information furnished to the Board of Trustees and the Committees on Gas of the Select and Common Councils, as is believed will enable all to act intelligently and justly. As the Committees on Gas have recently brought this subject before Councils for definite action, it is important that Councils should understand that in the event of their authorizing the Trustees to purchase the Gas Works referred to, it is indispensable that ample means should be provided for their enlargement—for the extension of the mains, service-pipes and meters, or they will prove an incubus to the Trust, if the present price of gas is to be continued.

The recent fire which occurred in the building immediately north of and adjoining our principal office in Seventh street, subjected us, for a period of some four weeks, to serious inconvenience, by crowding the clerks and books into the only two remaining and uninjured rooms in the south and rear end of the building. Three hundred dollars will doubtless cover the loss

we suatained. Workmen are now engaged by the Insurance Company, on behalf of the owners of the property, in making the necessary repairs. They have so far advanced with them that the offices are protected from the weather, and we have the use of them for the regular prosecution of the business of the Trust. In a short time, it is confidently believed, every repair will be completed.

It is proper to say, that notwithstanding the inconvenience to which we were so unexpectedly subjected, the business of the office was not suspended.

The new office provided by the Trust in the rear of the building, answers every expectation, and is creditable to the liberality of the Trustees.

On the night of the ninth instant, some evil disposed person, by means of false keys, opened the fire-proof safe in the gas office in the Fifteenth Ward, and abstracted seven hundred and thirty-three $\frac{18}{100}$ dollars, being a portion of the receipts of that day. The Mayor of the City was immediately put in possession of all the facts, and from the measures adopted by him, there is strong reason for believing that the offender will be speedily apprehended and brought to justice.

The private watchman belonging to the office has unfortunately disappeared since the robbery occurred. His place has been temporarily supplied by a trust-worthy man employed in the office, until a permanent appointment shall be made.

Respectfully submitted,

JOHN WIEGAND, *Cashier.*

Cash Account.

DR.

Balance, January 1st, 1856, - - -	$77,178 04

Receipts in 1856.

Sales of Gas, - - - -	862,270 63
" Coke, Tar, Lime, &c., - - -	35,200 71
" City Warrants, - - -	21,406 35
Interest on Loan 9, held for Sinking Fund, -	4,260 00
" City Loans, " " -	2,725 00
" Sales of Loan 9, - - -	291 25
Certificate of City Loan, paid, - -	300 00
Sales of Loan 9, - - - - -	278,500 00
Temporary Loans, - - - -	166,211 16
Extra Service Pipes and Meter Cocks, - -	16,671 15
	$1,465,014 29

CR.

Payments in 1856.

For the construction and enlargement of the works, - - - - -	$101,950 45
Extension of the Street Mains, - -	29,255 88
Service Pipes and Meters, - - -	66,992 60
Coal and other materials used in the manufacture of Gas; wages of workmen, &c., - -	477,425 45
Repairs of the Works, Street Mains, &c., -	95,384 35
Incidental expenses, Salaries and Services of Clerks, - - - -	102,185 14
Temporary Loans paid, - - - -	263,949 32
Interest on Temporary Loans, - -	1,413 52
Discount on City Warrants, - - -	7,100 38
Interest on Loans, - - - -	48,646 50
Investments for the Sinking Fund, - -	143,012 63
City Treasurer, for Interest on Loan, for $450,000, per Ordinance of March 20, 1855, -	59,505 00
City Warrants, - - - -	52 45
Balance on hand, January 1, 1857, - -	68,140 62
	$1,465,014 29

STATE OF THE WORKS, JANUARY 1ST, 1857.

Assets.

Works,	$1,114,819 79
Street Mains,	636,618 27
Service Pipes and Meters,	359,564 58
Public Lamps,	11,814 02
Cash,	68,140 62
Suspended Debt,	11,049 88
Stocks belonging to the Sinking Fund,	705,441 63
Coal on hand,	189,546 75
Coke on hand,	8,400 00
Rosin on hand,	3,360 00
Wood on hand,	1,500 00
Due for Gas sold, delivered, and on hand,	156,395 20
Due for Coke, Tar, &c.,	7,000 00
Interest on City Loans, due January 1, 1857,	1,364 00
Wharf Lot on the Schuylkill,	6,000 00
Site of the new Gas Works,	36,957 69
Spring Garden Gas Works,	300,000 00
Moyamensing Gas Works,	80,000 00
West Philadelphia Gas Works,	50,000 00
Frankford Gas Works,	20,000 00
Stocks belonging to the Sinking Fund, in the hands of the City Treasurer, as per Ordinance of March 20, 1855,	18,900 00
	$3,786,872 43

Liabilities.

Loans 1, 2, 3, 4, 5, 6, 7 and 8,	$1,370,000 00	
Loan 9,	410,200 00	
		$1,780,200 00
Dividends unpaid,		405 00
Interest on Gas Loans, including that due January 1st, 1857,		27,527 45
For Coals, Repairs and materials used in the manufacture of Gas,		279,310 63
Sinking Fund,		797,290 70
Sinking Fund, as per Ordinance of March 20, 1855,		18,900 00
Contingent Fund,		378,477 62
Profit and Loss, (amount of Suspended Debt,)		11,049 88
City of Philadelphia, for works taken, as per Ordinance of March 20th, 1855,		450,000 00
Temporary Loans,		43,711 15
		$3,786,872 43

STATEMENT OF THE SINKING FUND.

1856.		
Jan'y 1,	Amount of the Sinking Fund, - -	$705,320 20
June 30,	Six months' interest on $402,000 Gas Loans, at 6 per cent., - - -	12,060 00
	Six months' interest on $93,900 Gas Loans, at 5 per cent., - - -	2,347 50
	Six months' interest on $8,500 City Loans, at 6 per cent., - - -	255 00
	Six months' interest on $44,300 City Loans, at 5 per cent., - - -	1,107 50
	Six months' interest on $142,000, the amount taken for this Fund in the 6 per cent. Gas Loan, No. 9, issued by the City Treasurer, - - -	4,260 00
	Six months' appropriation of 2 per cent., per annum, on $475,000, Loans 1, 2 and 3, - - - - - -	4,750 00
	Of 3 per cent. per annum, on $125,000, Loan 4, - - - - - -	1,875 00
	Of 4 per cent. per annum, on $770,000, Loans 5, 6, 7 and 8, - - -	15,400 00
	Of 2 per cent. per annum, on $377,300, Loan 9, - - - - - -	3,773 00
Dec. 31,	Six months' interest on $402,800 Gas Loans, at 6 per cent., - - -	12,084 00
	Six months' interest on $93,900 Gas Loans, at 5 per cent. - - -	2,347 50
	Six months' interest on $8,800 City Loans, at 6 per cent., - - -	264 00
	Six months' interest on $44,000 City Loans, at 5 per cent., - - -	1,100 00
	Six months' interest on $142,000, the amount taken for this Fund, in the 6 per cent. Gas Loan, No. 9, issued by the City Treasurer, - - - -	4,260 00
	Six months' appropriation of 2 per cent. per annum, on $475,000, Loans 1, 2 and 3, - - - - - -	4,750 00
	Of 3 per cent. per annum, on $125,000, Loan 4, - - - - - -	1,875 00
	Of 4 per cent. per annum, on $770,000, Loan 5, 6, 7 and 8, - - -	15,400 00
	Of 2 per cent. per annum, on $406,200, Loan 9, - - - - - -	4,062 00
		$797,290 70

The amount invested is as follows:

1856.			
Jan'y 1,	Cost of investments at this date, - -		$562,729 00
Feb'y 9,	For $142,000, Loan 9, taken as an investment, - - - - -		142,000 00
Oct. 11,	Received for Certificate in 5 per cent. City Loan, which became due 1st July, - - - -	$300 00	
	Bought Certificate of 6 per cent. City Loan, cost -	270 38	
		$ 29 62	
Nov. 14,	Bought Certificate of Gas Loan, for $300, redeemable 1862, cost - - -	279 75	
		$250 13	
Nov. 15,	Bought Certificate of Gas Loan, for $500, redemable in 1862, cost - - -	462 50	
			712 63
			$705,441 63
	Balance not invested, - - - -		91,849 07
			$797,290 70

STATEMENT OF THE SINKING FUND,

Directed to be accumulated and applied by the City Treasurer, as per ordinance of March 20th, 1855, for the redemption of $450,000, the estimated value of the Spring Garden, Moyamensing, West Philadelphia and Frankford Gas Works; placed in charge of the Trustees by said ordinance.

1856.			
Jan'y 1,	Amount not invested, - - - -		$4,698 25
June 30,	Cash paid City Treasurer for said fund, -		4,500 00
	Interest on City Loan, held for said fund,		297 00
Dec. 31,	Cash paid City Treasurer for said fund, -		4,500 00
	Interest on City Loan, held for said fund,		459 00
			$14,454 25
Jan'y 18,	By investment in City Loan, $5,100, cost,	$4,610 25	
Nov. 19,	" " 100, "	90 25	
" 22,	" " 5,300, "	4,836 25	
			9,536 75
1851.			
Jan'y 1,	Amount not invested,		$4,917 50

Aggregate of investments for this fund, $15,300, in Certificates of 6 per cent. City Loan, cost - - - -	$13,982 50
Balance not invested, - - - -	4,917 50
	$18,900 00

CITY AND GAS LOANS BELONGING TO THE SINKING FUND, JANUARY 1, 1857.

Five per cent. City Loans:		
Redeemable in 1857, - -	$2,200	
1858, - -	7,100	
1859, - -	4,000	
1861, - -	1,100	
1862, - -	1,000	
1867, - -	3,900	
1870, - -	9,700	
1871, - -	5,200	
1872, - -	7,300	
1873, - -	2,200	
1874, - -	300	
		$44,000 00
Six per cent. City Loans:		
Redeemable in 1876, - -	$6,600	
1881, - -	600	
1888, - -	300	
1889, - -	1,300	
		8,800 00
Six per cent. Gas Loans:		
No. 1, redeemable in 1862, -	$11,200	
" 2, " 1863, -	57,300	
" 3, " 1861, -	32,100	
" 5, " 1868, -	36,100	
" 6, " 1869, -	14,100	
" 7, " 1870, -	66,100	
" 8, " 1872, -	185,900	
		402,800 00
Five per cent. Gas Loan, No. 4, redeemable in 1866, - - - - - - - -		93,900 00
Six per cent. Gas Loan, No. 9, issued by the City Treasurer, - - - - - -		142,000 00
		$691,500 00
The cost of the above was, - - - -		$705,441 63

STATEMENT OF THE PROFIT AND LOSS ACCOUNT FOR 1856.

1856.		
Jan'y 1,	Amount due for Coals, Materials and Repairs, chargeable to the manufacture of Gas,	$188,948 56
Dec. 31,	Sales of Gas, in 1856, - -	862,270 63
	" Coke, Tar, Lime, &c., -	35,200 71
	Interest received on sales of Loan 9,	291 25
	Stock of Coal on hand, - -	189,546 75
	" Coke " - -	8,400 00
	" Rosin " - -	3,360 00
	" Wood " - -	1,500 00
	Due for Coke, Lime, Tar, &c., -	7,000 00
	" Gas, - - -	156,395 20
	Suspended Debt, - - -	11,049 88
		$1,463,962 98

Jan'y 1,	Amount of Stock on hand, and debts due to the works at this time, -	$255,548 70
Dec. 31,	Payments for the manufacture of Gas, Coal and other materials and wages, including that of public lighting, - - - -	477,425 45
	Repairs, - - - -	95,384 35
	Incidental Charges, including Salaries and Services of Clerks, - -	102,185 14
	Interest on Temporary Loans, -	1,413 52
	Discount on City Warrants, - -	7,100 38
	Interest on Gas Loans for the year 1856,	80,950 00
	Interest on Gas Loan 9, payable at the City Treasury, - -	23,505 00
	Appropriation to the Sinking Fund, as directed by Ordinances, -	51,885 00
	Eight per cent. on $450,000, paid to City Treasurer, as per Ordinance approved March 20, 1855, - -	36,000 00
	Due for Coal, Repairs and Materials used in the manufacture of Gas,	279,310 63
	Suspended Debt, January 1st, 1856,	4,376 50
	Balance, - - -	48,878 31
		$1,463,962 98

The above balance of - -	$48,878 31	
less the sum of - -	6,673 38	
being the increase of the suspended debt during the year, gives the net increase of the Contingent Fund for 1856, - - - -		$42,204 93

STATEMENT OF THE CONTINGENT FUND, FOR 1856.

Amount of the Fund, January 1st, 1856, -		$336,272 69
Increase during the year, as per the Profit and Loss account, - - - -		42,204 93
		$378,477 62

The amount raised under various Ordinances for the construction and enlargement of the works, and for extraordinary repairs and renewals, and for working capital, has been to January 1st, 1857,

Loans 1, 2, 3, 4, 5, 6, 7 and 8,	$1,370,000	
Loan 9, sold, - -	410,200	
		$1,780,200 00
City of Philadelphia for works, per ordinance of March 20th, 1855, - - -		450,000 00
Contingent Fund, derived from profits, -		378,477 62
		$2,608,677 62

The amount expended has been:

Construction of works, - - -	$1,114,819 79
Street Mains, - - -	636,618 27
Service Pipes and Meters, - -	359,564 58
Public Lamps, - - -	11,814 02
Wharf Lot on the Schuylkill, - -	6,000 00
Site of the new Gas Works, - -	36,957 69
Spring Garden " - -	300,000 00
Moyamensing " - -	80,000 00
West Philadelphia " - -	50,000 00
Frankford " - -	20,000 00
	$2,615,774 35

The Liabilities of the Works, Jan. 1st, 1857, are as follows:

Construction of Works, Street Mains, Service Pipes and Meters, - -	$92,089 87
Coals, Repairs and Materials used in the manufacture of Gas, - - -	279,310 63
	$371,400 50

1856. ENGINEER'S ACCOUNTS. 1856.

WORKS.	Dolls.	C.	STREET MAINS.	Dolls.	C.	SERVICES.	Dolls.	C.
Wages of laborers and fitters employed in erecting new Works,	27,851	61	Wages of Men employed in laying Mains in Streets, .	5,857	35	Wages of Men employed in laying pipes and setting and fitting up Meters, . .	18,561	68
Castings, ...	33,076	63	Pipes & Castings, . . .	9,386	07	Meters, . .	24,226	21
Mason work and brick-laying, ...	5,395	09	Paving, . .	4,079	64	Tubing, . .	7,308	31
Bricks, ...	4,548	89	Lead, . . .	3,609	68	Stop-cocks, .	6,561	48
Iron, ...	4,244	99	Digging Trench,	3,169	65	Services and Meters paid for and returned, . .	2,546	29
Carting, ...	4,236	80	Carting, . .	1,589	30	Blankets, .	2,529	53
Fire-brick and Tile, .	3,360	77	Ship chandlery, . . .	614	82	Paving, . .	2,364	21
Lumber, ...	2,781	41	Valves, . .	543	00	Lead pipe, .	1,283	79
Stone, ...	2,543	51	Castings, . .	138	39	Lumber, . .	439	60
Roofing, ...	2,333	09	Turning, . .	86	62	Carting, . .	414	60
Paints, Oils, &c., . .	1,436	05	Picks and handles, . . .	71	07	Tin and Copper, . . .	274	53
Cement and Sand, .	1,316	42	Repairing Road,	49	80	Nails & Iron,	210	19
Railroad siding, . .	1,192	08	Powder and Fuse, . .	24	99	Solder and White Lead,	151	01
New office, ...	1,081	24	Drafting, . .	20	00	Fittings, . .	90	77
Meters and Repairs,	885	00	Proving Pipe,	15	50	Bricks, . .	30	40
Tubing, ...	800	00						
Lime, ...	755	90						
Lead pipe, ...	695	33						
Coal wagons, . . .	500	00						
Stop-cocks, ...	473	29						
Chimneys, ...	452	71						
Hardware, ...	377	36						
Tin and Copper Work	242	44						
Purifiers, ...	200	00						
Scales and Stoves, .	191	62						
Hydraulic Jacks, .	191	50						
Iron Borings, . . .	101	18						
India Rubber goods,	94	75						
Ship Chandlery, &c.,	64	44						
Sundries, ...	526	35						
Total, ...	101.950	45	Total, . .	29,255	88	Total, . .	66,992	60

1856. ENGINEER'S ACCOUNTS. 1856.

GAS.	Dolls.	C.
Wages of Stokers, etc., employed in Retort Houses and Purifying Houses, Manufacturing Gas and Wheeling Coke, Coals, &c., . . .	99,135	74
Coals, ...	271,946	38
Gas Bought, . .	25,250	69
Freight, . . .	15,746	55
Carting, Towing, Hoisting, &c., .	15,466	02
Wood, ...	4,768	06
Oyster shells, .	3,587	31
Lime, ...	625	77
Ship Chandlery,	52	50
Total, . .	436,579	02

REPAIRS.	Dolls.	C.
Wages of Carpenters, Blacksmiths, Bricklayers, Fitters and Laborers engaged in repairs of Works, Street Mains & Services,	29,718	50
Castings, . . .	30,918	15
Fire-brick and Tile,	8,632	89
Lumber, . . .	3,998	56
Iron and Nails, .	3,990	98
Repairs to Lamps, Lamp-posts and Lanterns, . . .	3,245	32
Meters, ...	3,073	60
Repairs to Gas Holders, ...	2,140	89
Hardware, . . .	1,324	65
Oils, Paints, &c., .	1,161	29
Tubing, ...	947	83
Shovels, ...	802	50
Wheelwright and Coach Work, . .	784	07
Roofing, ...	760	05
Carting, ...	724	36
Tin & Copper Work,	642	62
Stop-cocks and Screws, . . .	628	22
Mason Work, . .	544	14
Cotton Waste and Packing Yarn, .	431	09
Bricks, ...	422	85
Coal Wagons and Barrows, . . .	422	04
Saddlery and Harness, ...	416	55
Ship Chandlery, .	340	08
Brooms, ...	334	65
Machinist Work, .	331	24
Lead Pipe, . . .	337	52
Mica, Clay & Sand,	318	95
Leather & Belting,	230	91
Tools, ...	212	28
Burners and Caps for Public Lamps,	209	75
Repairing Pumps and Vice, . . .	167	74
Iron Borings, . .	164	85
Blacksmiths Coal,	103	33
Paving around Public Lamps, . .	113	52
Hose and Muslin,	62	39
Buckets & Baskets,	60	00
Stoves, ...	34	25
Sundries, . . .	373	43
Total, . . .	99,126	04

INCIDENTALS.	Dolls.	C.
Wages of Clerks, Men employed in Inspection of Fittings and Meters, and taking Statements for Bills, Storing Coals and Coke at Works, Measuring Coke, Tar, &c., and attending the Public Lamps, ...	85,500	20
Fluid, Filling and Trimming Public Lamps, ...	14,821	62
Rents, ...	14,791	73
Carting and Horses,	4,398	21
Printing, Drawing Stationery and Engraving, . .	2,600	20
Alcohol, . . .	1,584	54
Horse Feed, . .	931	80
Carriage Hire and Sundries for Board and Councils, .	869	56
Taxes and Water,	665	56
Bituminous Coal,	382	70
Advertising and Papers, . . .	379	50
Wagon and Wheelwright Work, .	285	06
Paints, Oils, Drugs, &c., ...	234	58
Fire Proof Safe, .	200	00
Lumber & Canvass,	118	24
Matches for Public Lamps, . . .	168	40
Ship Chandlery, .	116	91
Smith Work and Saddlery, . . .	99	34
Reports Lighting,	98	00
Cleaning Office in S. G., ...	73	00
Gas Fixtures, . .	64	85
Soap, Tallow, &c.,	64	12
Ice, ...	58	20
Hardware & Tools	46	30
Birch Brooms, .	36	39
Party Wall, . .	36	12
Office Rent and Furniture for Lamp Department, . .	22	92
Sundries, . . .	427	15
Total, . . .	129,075	20

CITY REGISTRY.

DATE.	Applications.	Removals and Discontinuances.	Private Lights.		Public Lights.		
1856.			Added.	Total.	Streets.	Market Houses.	Squares.
To January 1st,	47,117	24,219	100,614	283,216	3,188	76	85
January, - -	287	229	1,573	284,789			
February, - -	310	262	1,251	286,040			
March, - - -	387	281	1,598	287,638			
April, - - -	637	398	2,898	290,536			
May, - - -	697	445	3,054	293,590			
June, - - -	520	333	2,043	295,633			
July, - - -	450	328	1,883	297,516			
August, - - -	481	353	2,122	299,638			
September, - -	828	529	2,899	302,537			
October, - -	831	495	4,173	306,710	43		
November, - -	1,113	489	3,678	310,388	35		
December, - -	599	352	3,080	313,468	6		
Total, - - -	7,140	4,494	30,252		84		
Brought down,	47,117	24,219	100,614		3,188	76	85
Grand Total, -	54,257	28,713	130,866	313,468	3,272	76	85

DATE.	Services Laid.	METERS SET.										PUBLIC LAMPS.		
1856.		3 Light.	5 Light.	10 Light.	20 Light.	30 Light.	45 Light.	60 Light.	100 Light.	150 Light.	500 Light.	On Posts.	On Walls.	Market Houses
To January 1st,	22,123	11,313	7,169	2,508	720	172	95	33	59	1		2,509	255	76
January, - - -	24	10	5	6	2	1	0	1	0					
February, - - -	26	3	14	7	1	0	0	0	1					
March, - - - -	34	9	13	5	5	2	0	0	0					
April, - - - -	352	154	138	38	13	4	3	2	0					
May, - - - -	281	122	95	52	11	0	0	1	1					
June, - - - -	163	64	52	36	9	1	1	0	0					
July, - - - -	136	60	31	30	11	1	3	0	0					
August, - - -	129	64	37	20	8	0	0	0	0					
September, - -	293	141	71	45	29	2	4	1	0					
October, - - -	343	142	109	54	27	9	2	0	1			43		
November, - - -	321	164	84	47	18	1	1	1	1		4	35		
December, - - -	221	122	49	35	10	2	1	2	0			6		
Total, - - - -	2,323	1,055	698	375	144	23	15	8	4		4	84	0	0
Brought down, -	22,123	11,313	7,169	2,508	720	172	95	33	59	1	0	2,509	255	76
Grand Total, - -	24,446	12,368	7,867	2,883	864	195	110	41	63	1	4	2,593	255	76

DATE.	MAIN PIPE LAID IN STREETS, LINEAL FEET.										
1856.	1½ inch	2 inch	3 inch	4 inch	6 inch	8 inch	10 inch	12 inch	16 inch	20 inch	TOTAL.
To January 1st, - -	426	118,138	443,100	327,961	75,595	43,862	17,475	21,776	11,133	22,633	1,082,099
January, - - - - - -											
February, - - - - -											
March, - - - - - -			216								216
April, - - - - - -			1,711	1,143	7,065	3,834					13,753
May, - - - - - - -			2,763	5,580							8,343
June, - - - - - - -		302	1,492	63						500	2,357
July, - - - - - - -			701	1,071	5		5			4	1,786
August, - - - - - -		306	345	81							732
September, - - - - -		456	3,974	2,097	207						6,734
October, - - - - - -		431	3,284	3,227							6,942
November, - - - - -		234	3,182	2,230	9						5,655
December, - - - - -		227	2,273	1,104							3,604
Total, - - - - - - -		1,956	19,941	16,596	7,286	3,834	5			504	50,122
Brought down, - - -	426	118,138	443,100	327,961	75,595	43,862	17,475	21,776	11,133	22,633	1,082,099
Grand Total, - - -	426	120,094	463,041	344,557	82,881	47,696	17,480	21,776	11,133	23,137	1,132,221

REPAIRS OF SERVICES.

1856.	Stop-Cocks Renewed.	New Covers for Stop-Cock Boxes.	Services Renewed.	New Stop-Cock Boxes.
January, - - - - - -	5	0	2	0
February, - - - - - -	12	0	2	0
March, - - - - - - -	7	4	0	1
April, - - - - - - -	9	95	2	130
May, - - - - - - - -	16	198	3	202
June, - - - - - - -	11	51	5	69
July, - - - - - - - -	15	8	4	12
August, - - - - - -	21	13	5	22
September, - - - - -	16	7	8	8
October, - - - - - -	24	6	3	10
November, - - - - -	28	7	12	14
December, - - - - -	12	2	2	3
Total, - - - - - - -	176	391	48	471

STATEMENT OF GAS

Paid for in each month of the year, made in the First, Ninth and Fifteenth Wards, being the amount of Bills as per Meters to the first of the month.

1856.	Feet of Gas Consumed at Private Houses.	Public Lamps.	Supplied to Southwark Gas Company.	Sup'd by S. G Works. Feet of Gas Consumed at Private Houses.	Sup'd by S. G Works. Public Lamps.	TOTAL.
January, -	28,438,440		6,018,500	4,990,400		39,447,340
February,	26,527,970			5,444,900		31,972,870
March, -	31,843,700			5,162.200		37,005,900
April, - -	21,871,170		5,439,400	5,124,700		32,435,270
May, - -	19 914,900			3,760,500		23,675,400
June, - -	23,768,070			3.509,300		27.277,370
July, - -	13,177,900		3,929,000	2,953,600		20,060,500
August, -	10,270,100			2,491,400		12,761,500
September,	13,020,700			2,249,000		15,269,700
October, -	12.301,600		3,642,100	2,901,800		18,845,500
November,	18,472.000			4,097.000		22,569,000
December,	29,207,200	58,809,600		8,132,000	22,125,600	118,274,400
Total, - -	248,813,750	58,809,600	19,029,000	50,816 800	22,125,600	399,594,750
Inventory of Stock of Gas delivered and on hand—						6,265,450
Spring Garden, Jan. 1, 1857,		14,136,200	City, Jan. 1, 1857,		66,185,515	
" Jan. 1, 1856,		9,911,400	" Jan. 1, 1856,		64.144,865	
		4,224,800			2,040,650	405,860,200

ANNUAL REGISTRY

OF CONSUMERS, AND PRIVATE AND PUBLIC LIGHTS.

DATE.				PRIVATE LIGHTS.		PUBLIC LIGHTS.			
To December 31st,	Applications.	Removals and Discontinuances.	Total Number of Consumers.	Added.	Total.	Streets.	Market Houses.	Squares.	Total.
1836,	301	24	277	2,952	2,952	165			165
1837,	497	108	666	3,862	6,814	136			301
1838,	849	174	1,341	4,288	11,102	133		62	496
1839,	946	300	1,987	5,380	16,482	162	18		676
1840,	788	382	2,393	3,317	19,799	112	1		789
1841,	874	493	2,774	4,387	24,186	13	8		810
1842,	845	541	3,078	3,054	27,240	30			840
1843,	986	635	3,429	3,418	30,658	59			899
1844,	1,000	503	3,926	4,940	35,598	195			1,094
1845,	1,147	629	4,444	5,754	41,352	112			1,206
1846,	1,465	717	5,192	8,138	49,490	96			1,302
1847,	1,869	887	6,174	12,987	62,477	84	10		1,396
1848,	1,956	1,002	7,128	13,935	76,412	21			1,417
1849,	2,191	1,180	8,139	18,050	94,462	74			1.491
1850,	2,227	1,150	9,216	20,542	115,004	72	13		1,576
1851,	2,529	1,339	10,406	21,616	136,620	124			1,700
1852,	3,004	1,747	11,663	20,550	157.170	118			1,818
1853,	3,280	1,954	12,989	25,432	182,602	87		23	1,928
1854,	2,884	1,969	13,904	18,127	200,729	27			1,955
1855,	17,479	8,485	22,898	82,487	283,216	1,368	26		3,349
1856,	7,140	4,494	25,544	30,252	313,468	84			3,433
Total, - - - -	54,257	28,713		313,468		3,272	76	85	

STATEMENT OF METERS SET EACH YEAR.

DATE.	Services Laid.	METERS SET.									
To Dec. 31st		3 light.	5 light.	10 light.	20 light.	30 light.	45 light.	60 light.	100 light.	150 light.	500 light.
1836,	251	108	98	31	9	2	3				
1837,	411	301	77	19	6	2	3		3		
1838,	690	442	159	61	13	9	2	1	3		
1839,	649	421	118	75	26	6	3				
1840,	350	198	78	54	13	3	2		2		
1841,	375	203	93	63	14	2					
1842,	299	157	76	57	6	3					
1843,	348	180	110	50	7	1					
1844,	503	292	129	72	5	3	1		1		
1845,	523	311	151	49	7	4		1			
1846,	761	390	237	113	14	4	2	1			
1847,	999	481	300	202	12	1	3				
1848,	971	408	333	196	25	4	3	1	1		
1849,	1,029	366	366	234	46	7	5	2	3		
1850,	1,079	435	412	165	50	8	3	3	3		
1851,	1,211	534	373	204	76	15	4	2	3		
1852,	1,261	638	334	200	60	18	7	3	1		
1853,	1,364	688	360	167	92	23	12	6	15	1	
1854,	939	470	207	127	89	29	14	2	1		
1855,	8,110	4,290	3,158	369	150	28	28	11	23		
1856,	2,323	1,055	698	375	144	23	15	8	4		4
Totals, - -	24,446	12 368	7,867	2,883	864	195	110	41	63	1	4

LENGTH OF MAINS LAID IN STREETS EACH YEAR, IN LINEAL FEET.

DATE.	1½ inch.	2 inch.	3 inch.	4 inch.	6 inch.	8 inch.	10 inch.	12 inch.	16 inch.	20 inch.	TOTAL.
1836,		2,310	15,951	10,184	4,018		9,140				41,603
1837,		3,468	13,068	4,302	6,984						27,822
1838,		150	15,660	14,409	9,036		27	10,881	2,340		52,503
1839,		1,704	11,629	11,997	4,419	3,726					33,475
1840,		222	1,674	576	261						2,733
1841,		204	8,874	7,137	27						16,242
1842,		324	6,831	3,483	360	774					11,772
1843,		966	32,796	16,767	1,395	1,053					52,977
1844,		30,696	38,655	23,555	2,358	3,663	891				99,818
1845,	426	3,240	9,360	4,725	837						18,588
1846,		10,734	9,855	8,442	378	2,070					31,479
1847,		4,164	6,660	2,808	900	135					14,667
1848,		1,734	7,578	3,897	1,458	477					15,144
1849,		9,690	9,117	5,724	2,934	13,284	4,266	2,619	8,073	495	56,202
1850,		6,666	9,513	6,345	2,718						25,242
1851,		11,901	18,441	10,755	720	324					42,141
1852,		18,864	19,710	14,958		1,359				6,867	61,758
1853,		7,152	3,744	3,780	414				720	7,257	23,067
1854,		678	1,026	828							2,532
1855,		3,271	202,958	173,289	36,378	16,997	3,151	8,276		8,014	452,334
1856,		1,956	19,941	16,596	7,286	3,834	5			504	50,122
Totals, - - - -	426	120,094	463,041	344,557	82,881	47,696	17,480	21,776	11,133	23,137	1,132,221

STATEMENT OF GAS DELIVERED TO PUBLIC AND PRIVATE LIGHTS TO DECEMBER 31, IN EACH YEAR, BY THE WORKS IN THE FIRST AND NINTH WARDS.

YEAR.	PUBLIC LIGHTS.	PRIVATE LIGHTS.	SPRING GARDEN.	SOUTHWARK.	MOYAMENSING.	WEST PHILAD'A.	Used at Offices, Shops and Works, loss by leakage, etc	MADE AT WORKS.
1836,	978,812	4,752,740					749,748	6,481,300
1837,	1,397,687	14,454,891					1,226,122	17,078,700
1838,	3,013,546	22,366,004					1,977,450	27,357,000
1839,	6,280,654	30,658,145					2,534,201	39,473,000
1840,	8,028,818	34,874,380					2,506,802	45,410,000
1841,	10,208,180	39,648,000					1,415,820	51,272,000
1842,	13,292,000	36,596,830					922,170	50,811,000
1843,	12,985,851	34,579,900					1,324,249	48,890,000
1844,	13,608,356	40,022,800					1,152,844	54,784,000
1845,	13,373,798	46,702,800					926,402	65,003,000
1846,	19,164,106	55,219,800	163,400				906,694	75,454,000
1847,	19,122,293	68,071,600	2,507,100				1,846,007	91,547,000
1848,	19,924,700	78,921,350	6,817,000				1,109,950	106,773,000
1849,	24,524,950	96,247,100	10,713,200	2,322,800	195,800		1,505,150	135,509,000
1850,	28,482,800	131,258,400	17,650,600	3,457,800	417,900		748,500	182,016,000
1851,	36,524,625	145,114,200	7,039,800	5,279,000	1,254,700		5,629,675	200,842,000
1852,	38,306,250	162,093,100		5,927,900	2,892,400	354,600	6,641,750	216,216,000
1853,	37,406,625	191,679,750		10,458,200	5,810,700	2,765,720	1,306,005	249,427,000
1854,	40,177,874	209,334,300		14,989,200	8,304,000	6,501,800	2,916,826	282,224,000
1855,	48,049,050	209,606,065		18,099,000	7,660,600	10,386,200	6,212,085	300,013,000
Works in the 15th Ward,								2,246,581,000
from April 1st, 1855,	10,270,300	27,644,100					9,850,000	47,764,400
Total, - - - - - -								2,294,345,400

STATEMENT OF GAS

Made at all the Works Managed under the Trust, and of that Delivered to Public and Private Lights, from Jan. 1st to Dec. 31st, 1856.

YEAR 1856.	Made at Work in First Ninth and Fifteenth Wards.	GAS DELIVERED TO			Used at Works and Offices of the Trust, and lost by leakage, &c.
		Public Lights.	Private Lights.	Southwark Gas Company	
	434,742,000	80.935,200	304,961,250	18,992.500	29,853,050
Made in Previous Years, -	2,294,345,400				
Total, - - -	2,729,087,400				

The increased per centage of loss and waste of gas in the past year, results from several obvious causes: one is the recent connections with the pipes in the outer Wards, which are much less gas-tight than they ought to be; another, is the breakage of several large mains, and a third, the waste and blowing out the air from the large gas holder in First Ward, when first filled, and from an unusually large quantity of Street Mains, into which gas was newly introduced.

A COMPLETE LIST

OF THE

TRUSTEES OF THE PHILADELPHIA GAS WORKS,

FROM THE COMMENCEMENT,

IN THE ORDER OF THEIR APPOINTMENT.

Elections by Select Council, March 26th, 1835.

Benjamin W. Richards, John R. Latimer,	for one year.
A. D. Bache, W. H. Keating,	for two years.
J. P. Wetherill, H. M. Zollickoffer,	for three years.

Elections by Common Council.

John Farr, R. M. Huston,	for one year.
Frederick Fraley, Ephraim Hains,	for two years.
M. W. Baldwin, Thomas Cave,	for three years.

B. W. Richards, *President.*
Samuel V. Merrick, *Engineer.*
Benjamin Matthias, *Secretary.*

B. W. Richards resigned the Presidency June 20th, 1835.

Dr. R. M. Huston elected President July 10th, 1835.

Dr. J. K. Mitchell elected July 9th, 1835, in place of B. W. Richards, resigned.

John Siter elected January 28th, 1836, in place of J. K. Mitchell, resigned.

Benjamin Matthias, Secretary, resigned March, 1856.

Frederick Brown elected January 19th, 1837, in place of A. D. Bache, whose term of service expired.

Samuel V. Merrick, Engineer, resigned February, 1837.

Alexander Ferguson elected November 23d, 1837, in place of Ephraim Haines, deceased.

John Wiegand elected April 12th, 1838, in place of H. M. Zollickoffer, resigned.

A. D. Bache elected September 27th, 1838, in place of John Siter, resigned.

George Handy elected January 30th, 1839, in place of J. R. Latimer, resigned.

Thomas Cave elected President in place of Dr. R. M. Huston, resigned June 28th, 1839.

Charles Gilpin elected January 14th, 1841, in place of W. H. Keating, deceased.

Thomas S. Smith elected January 28th, 1841, in place of M. W. Baldwin, whose term of service expired.

G. H. Burgin elected January 20th, 1842, in place of George Handy, whose term of service expired.

Isaac Myer elected January 20th, 1842, in place of R. M. Huston, whose term of service expired.

Samuel Norris elected January 19th, 1843, in place of Alexander Ferguson, whose term of service expired.

Isaac Barton elected January 18th, 1844, in place of Thomas S. Smith, whose term of service expired.

John C. Davis elected November 7th, 1844, in place of A. D. Bache, resigned.

Frederick Fraley elected President in place of Thomas Cave, deceased, March 28th, 1845.

Joseph S. Lovering elected April 10th, 1845, in place of Thomas Cave, deceased.

John Trucks elected June 19th, 1845, in place of Charles Gilpin, resigned.

Jacob E. Hagert elected January 29th, 1846, in place of Frederick Brown, whose term of service expired.

Frederick Brown elected March 25th, 1846, in place of John Farr, deceased.

M. W. Baldwin elected October 28th, 1847, in place of John Trucks, resigned.

John Agnew elected December 23d, 1847, in place of J. E. Hagert, resigned.

William Morris elected January 20th, 1848, in place of J. C. Davis, whose term of service expired.

John F. Gilpin elected January 20th, 1848, in place of G. H. Burgin, whose term of service expired.

G. H. Burgin elected April 6th, 1848, in place of J. S. Lovering, resigned.

John C. Davis elected April 13th, 1848, in place of W. Morris, resigned.

James Traquair elected January 18th, 1849, in place of Frederick Brown, resigned.

John Lindsay elected December 20th, 1849, in place of J. P. Wetherill, resigned.

Lewis Cooper elected December 20th, 1849, in place of J. C. Davis, resigned.

B. M. Feltwell elected January 31st, 1850, in place of Isaac Barton, resigned.

E. Y. Farquhar elected March 15th, 1850, in place of J. Lindsay, resigned.

John C. Davis elected October 24th, 1850, in place of E. Y. Farquhar, resigned.

Charles Lennig elected October 24th, 1850, in place of John Agnew, resigned.

Benjamin Gerhard elected January 30th, 1851, in place of Isaac Myer, resigned.

E. A. Souder elected January 29th, 1852, in place of M. W. Baldwin, resigned.

Samuel R. Brick elected January 25th, 1855, in place of E. A. Souder, whose term of service expired.

Wm. J. P. White elected January 25th, 1855, in place of Charles Lennig, whose term of service expired.

John Manuel elected January 25th, 1855, in place of Samuel Norris, whose term of service expired.

Wm. G. Flanagan elected January 25th, 1855, in place of Frederick Fraley, whose term of service expired.

John Wiegand elected President, in place of Frederick Fraley, whose term of service expired.

Frederick Fraley elected August 2d, 1855, in place of John Wiegand, resigned.

Paul J. Field elected January 31st, 1856, in place of John C. Davis, whose term of service expired.

John M. Odenheimer elected January 31st, 1856, in place of Benjamin M. Feltwell, whose term of service expired.

G. W. Biddle elected June 26th, 1856, in place of W. G. Flanagan, resigned.

Anthony Miskey elected January 29th, 1857, in place of John F. Gilpin, whose term of service expired.

Andrew C. Craig elected January 29th, 1857, in place of James Traquair, whose term of service expired.